1. INTRODUCTION AND SUMMARY

The purpose of this document is to provide waste quantity and sequencing information that serves as the design basis for commercial spent nuclear fuel (CSNF) arriving at the repository, and the information on the transportation systems that will be used to deliver this fuel. It is intended as input for waste package and repository design analyses needed to ensure that facilities are flexible enough to be capable of receiving, unloading, handling, and emplacing the amounts and types of CSNF expected for receipt under realistic bounding conditions. It must be recognized that within the bounding limits, there will be CSNF with characteristics different from those described in this document, that must still be accepted into the Civilian Radioactive Waste Management System (CRWMS).

The previous Design Basis Waste Stream (DBWS) Report, issued in September 1996 [*Design Basis Waste Stream for Interim Storage and Repository* (CRWMS M&O 1996a)], relied on assumptions that are no longer valid based on current program planning, such as the elimination of the interim storage facility (ISF). Other changes include the acceptance of 83,800 Metric Tons of Heavy Metal (MTHM), instead of 63,000 MTHM, and the difference in when fuel is pulled from dry storage for shipment to the repository. To more accurately model utility fuel selection, all fuel that meets transportation limits is pulled from pool storage before it is pulled from dry storage. In addition, projected changes in spent fuel characteristics (resulting from utilities' desires to decrease fuel cycle costs) require examination to determine their effect on system design.

This analysis provides input useful for system throughput and sizing. However, it is based on assumptions of future system operations and forecasts of utility fuel selection that cannot be predicted with absolute certainty, as they rely on events outside of the control of the Office of Civilian Radioactive Waste Management (OCRWM). Consequently, there is no way of knowing the actual waste stream profile that will occur, and there are many uncertainties that affect the design of the CRWMS. Therefore, representative waste streams were developed as reasonable bounding cases based on consideration of the tradeoffs facing utilities and transportation contractors.

An Activity Evaluation has been conducted in accordance with QAP-2-0 REV 05, *Conduct of Activities*, and has determined that this report is not subject to the requirements of the Quality Assurance Requirements and Description (QARD) (DOE 1998b). Revision 00 of this report was prepared under PRO-TS-003 REV 01, *Development of Technical Documents Not Subject to QARD Requirements*. As this procedure has since been cancelled, REV 01 of this DBWI Report has been developed using AP-3.11Q, *Technical Reports*, as guidance.

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